

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for in-season nutrient application to a crop including the steps of:

- (a) determining a maximum potential crop yield for a field;
- (b) determining a nutrient response index for a field;
- (c) determining a reference coefficient of variation for the nutrient response index;
- (d) measuring a normalized difference vegetation index for a plot within said field;
- (e) determining a coefficient of variation within said plot;
- (f) determining a predicted yield for said plot;
- (g) determining an attainable plot yield with added nutrient as a function of said predicted yield, said nutrient response index, and said reference coefficient of variation;
- (h) determining the nutrient removal at said predicted ~~crop~~ plot yield;
- (i) determining the nutrient removal at said attainable plot yield;

(j) determining the amount of additional nutrient which must be supplied to achieve said attainable ~~crop~~ plot yield; and

(k) applying said amount of nutrient to said plot.

2. (Original) The method for in-season nutrient application to a crop of claim 1 wherein step (b) includes the substeps of:

(b) determining a nutrient response index for a field by performing the steps of:

(i) providing a first area treated with the nutrient such that said first area is a non-limiting fertilized area;

(ii) providing a second area treated with a predetermined amount of the nutrient;

(iii) determining a normalized difference vegetation index for said first area;

(iv) determining a normalized difference vegetation index for said second area; and

(v) dividing said normalized difference vegetation index for said first area by said normalized difference vegetation index for said second

area.

3. (Currently Amended) The method for in-season nutrient application to a crop of claim 1 wherein step (d) includes the substeps of:

(d) determining the normalized difference vegetation index for a plot within said field by performing the steps of:

- (i) scanning said plot with a ~~with a~~ reflectance sensor, said reflectance sensor sensing reflectance at red light and at near infrared light;
- (ii) determining the reflectance of the vegetation in said plot to red light;
- (iii) determining the reflectance of the vegetation in said plot to near infrared light; and
- (iv) dividing the difference of the reflectance determined in step ~~(d)(ii)~~—
(d)(iii) minus the reflectance determined in step ~~(d)(iii)~~ (d)(ii) by the sum of the reflectance determined in step (d)(ii) and ~~he~~ the reflectance determined in step (d)(iii).

4. (Original) The method for in-season nutrient application to a crop of claim 3 wherein step (e) includes the substeps of:

(e) determining a coefficient of variation within said plot by performing the steps of:

- (i) performing steps (d)(i) through (d)(iv) successively over said plot;
- (ii) calculating the standard deviation of the normalized difference vegetation index of said plot;
- (iii) calculating the mean of the normalized difference vegetation index of said plot; and
- (iv) calculating the coefficient of variation of the normalized difference vegetation index for said plot.

5. (Original) The method for in-season nutrient application to a crop of claim 1 wherein step (f) includes the substeps of:

- (f) determining a predicted yield for said plot by performing the steps of;
- (i) determining the number of growing days since the planting of the crop;
 - (ii) calculating an in-season estimated yield index for said plot by dividing said normalized difference vegetation index measured in

step (d) by said number of growing days determined in step (f)(i);

and

- (iii) calculating the predicted crop yield for said plot as a function of the in-season estimated yield index for said area.

6. (Original) The method for in-season nutrient application to a crop of claim 1 wherein step (g) includes the substeps of:

- (g) determining an attainable yield by performing the steps of:
 - (i) adjusting the response index of step (b) as a function of the coefficient of variation of step (e); and
 - (ii) multiplying the predicted yield of step (f) times the adjusted response index of step (g)(i);

7. (Original) The method for in-season nutrient application to a crop of claim 1 wherein said nutrient is nitrogen.

8. (Original) The method of claim 1 wherein the coefficient of variation determined in step (e) is the coefficient of variation of the normalized difference vegetation

index measured in step (d).

9. (Original) The method of claim 1 wherein the coefficient of variation determined in step (e) is the coefficient of variation of plant height of plants within said plot.

10-28. (Canceled)